

# Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electrical and Electronics Engineering

Lesson plan of faculty member for the academic year 2017–18

Class: III B Tech

Branch-Section: EEE

Semester: I

Subject: Control systems

Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
<b>UNIT – I: Introduction</b>		
1	Introduction	13 July2017
2	Concepts of Control Systems	14 July2017
3	Open Loop and closed loop control systems	15 July2017
4	Tutorial (G2,G1): Real time applications of CS	12,13 July2017
5	Different examples of control systems	20July2017
6	Classification of control systems	21 July2017
7	Feed-Back Characteristics	22 July2017
8	Tutorial (G3,G2,G1): Problems related to feed-back	18,19,20 July2017
9	Effects of feedback	24 July2017
10	Mathematical models	27 July2017
11	Differential equations	28 July2017
12	Impulse Response and transfer functions	29 July2017
13	Tutorial (G3,G2,G1): Problems on math modeling	25,26,27 July2017
14	Translational mechanical systems	31 July2017
15	Numericals	3 August 2017
16	Rotational mechanical systems	4 August 2017
<b>UNIT-II: Transfer Function Representation</b>		
17	Transfer Function of DC Servo motor	5 August 2017
18	Tutorial (G3,G2,G1): Problems on DC Servo Motor	1,2,3 August 2017
19	AC Servo motor	7 August 2017
20	Synchro transmitter and Receiver	10 August 2017
21	Block diagram representation of electrical systems	11 August 2017
22	Block diagram algebra	12 August 2017
23	Tutorial (G3,G2,G1): Problems on block diagram	8,9,10 August 2017
24	Representation by Signal flow graph	17 August 2017
25	Signal flow graph Algebra	18 August 2017
26	Reduction using mason's gain formula	19 August 2017
27	Tutorial (G2,G1): Problems on SFG	16,17 August 2017
28	Properties of Signal flow graph	21 August 2017
29	Comparison of Block diagram method and SFG method	24 August 2017
30	Numerical Problems	26 August 2017
31	Tutorial (G3,G2,G1): Problems on Block diagram&SFG	22,23,24 August 2017
<b>UNIT-III: Time Response Analysis</b>		
32	Standard test signals	28 August 2017
33	Time response of first order systems	31August 2017
34	Tutorial (G3,G2,G1): Problems on first order systems	29,30,31August2017
35	Characteristic Equation of Feedback control systems	1September2017
36	Transient response of second order systems	4September2017
37	Time domain specifications	9 September2017
38	Tutorial (G3): Problems on second order systems	5 September2017
39	Steady state response	11 September2017
40	Steady state errors and error constants	14 September2017
41	Static error constants	15 September2017

42	Correlation between Static and Dynamic errors	16 September2017
43	Tutorial (G3,G2,G1): Problems related to steady state	12,13,14September 2017
44	Response with P,PI,PD and PID Controllers	18 September2017
45	Effects of proportional derivative and integral systems	21 September2017
46	Numerical	22 September2017
<b>UNIT-IV: Stability Analysis in S-Domain and Root Locus Technique</b>		
47	The concept of stability	23 September2017
48	Tutorial (G3,G2,G1): Problems on S-plane	19,21September 2017
49	Routh's stability criterion	5 October2017
50	Qualitative stability and conditional stability	6 October2017
51	Numericals	7 October2017
52	Tutorial (G3,G2,G1): Problems on Routh's stability	3,4,5October2017
53	Limitations of Routh's stability	9 October2017
54	The Root locus concept	12 October2017
55	Construction of Root Loci	13 October2017
56	Tutorial (G3,G2,G1): Rules for the construction of Locus	10,11,12October 2017
57	Basics of PID controllers	16 October2017
58	Effects of adding poles and zeros to G(s) H(s) on the root loci.	19 October2017
59	Addition of poles to G(s) H(s)	20 October2017
60	Addition of Zeros to G(s) H(s)	21 October2017
61	Tutorial (G3, G1): Problems on Root locus technique	17,19October 2017
<b>UNIT-V: Frequency Response Analysis</b>		
62	Introduction	23 October2017
63	Frequency domain specifications	26 October2017
64	Bode diagrams	27 October2017
65	Frequency domain specifications& transfer function	28 October2017
66	Tutorial (G3,G2,G1): Problems on frequency domain	24,25,26October2017
67	Phase margin and Gain margin	30October2017
68	Stability Analysis from Bode Plots	2November2017
69	Bode plot for constant K, differentiator, integrator and first order factor in numerator and denominator	3 November2017
70	Tutorial (G3, G2,G1): Problems related to Bode plot	31October1,2 November2017
71	Construction of Bode pot	6 November2017
72	Tutorial (G3): Revision	7November2017

#### TEXT BOOKS:

1. Control Systems Theory and Applications - S. K. Bhattacharya, Pearson.
2. Control Systems - N. C. Jagan, BS Publications.
3. Control Systems - A. Ananad Kumar, PHI.
4. Control Systems Engineering - S. Palani, TMH.
5. Control Systems - Dhanesh N. Manik, Cengage Learning.
6. Control Systems Engineering - I. J. Nagrath and M. Gopal, New Age International (P) Limited, Publishers.
7. Control Systems - N. K. Sinha, New Age International (P) Limited Publishers.

Name and signature of the faculty: Dr Aruna Bharathi M

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Name and signature of Head of the Department: Ms Deepthi S

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